Fig. 1

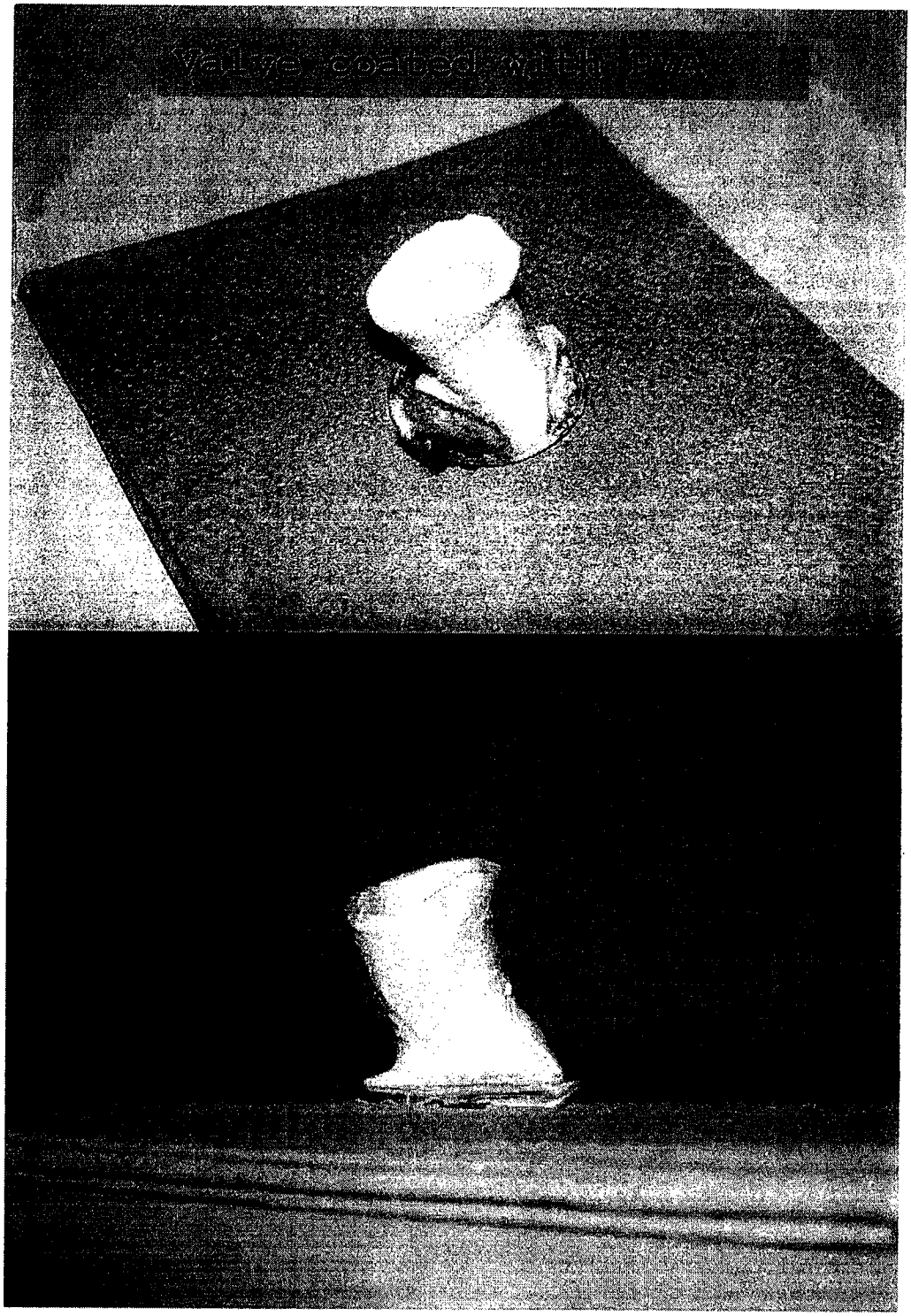


Fig. 2

Results of tensile strength test of native canine aorta.

Testing machine	RTC series			Type of testing	Extension		
Load in full-scale	5 kgf			Rated capacity of load cell	100 N		
Range of load	40 %RO			Rated capacity of the extensometer	20 om		
Range of the extensometer	unapplied			Test Speed	10.0 mm/min		
Recording speed off				Rigidity of the testing machine	0 mm/kgf		
Midpoint (load)	0	0	0	Midpoint	0	50	60
N	0	0	0	(extension) cm	0	0	0
Analysis of Elastic moduli	Interval	1	50	Initial length , Distance between chunks	10 mm		
	Pitch	1 %max		origin in extension initial load point	0.03 N		
slack correction	applied			Determination of rupture point	0.5 N		
Storing SS curve	ON						

TestID=37 Test No.	Maximum load kgf	Maximum load N	Rupture load kgf	Rupture load N	Maximum Extension mm	Elastic Modulus MPa
1	0.7591	7.4445	0.5038	4.9404	27.887	1.0918
Average	0.7591	7.4445	0.5038	4.9404	27.887	1.0918
JIS weighted avg	0.7591	7.4445	0.5038	4.9404	27.887	1.0918
Median	0.7591	7.4445	0.5038	4.9404	27.887	1.0918
Maximum	0.7591	7.4445	0.5038	4.9404	27.887	1.0918

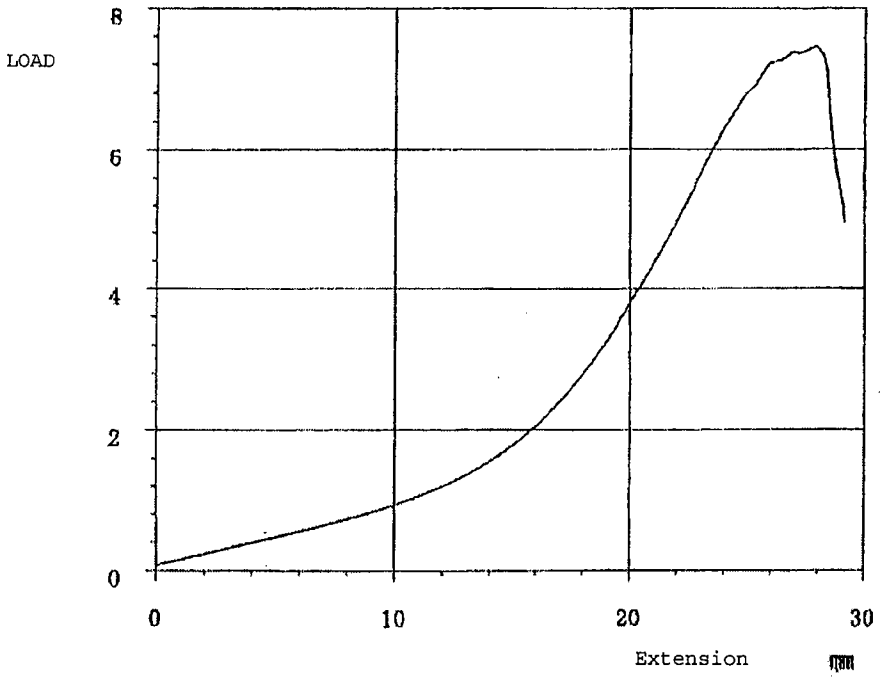


Fig. 3

Results of tensile strength test of valves by means of decellularization cell method by SDS

Testing machine	RTC series			Type of testing	Extension		
Load in full-scale	5 kgf			Rated capacity of load cell	100 N		
Range of load	40 %RO			Rated capacity of the extensometer	20 cm		
Range of the extensometer	unapplied			Test Speed	10.0 mm/min		
Recording speed off				Rigidity of the testing machine	0 mm/kgf		
Midpoint (load)	0	0	0	Midpoint	0	50	60
N	0	0	0	(extension) cm	0	0	0
Analysis of Elastic moduli	Interval	1	50	Initial length Distance between chunks	10 mm		
	Pitch	1 %max		origin in extension initial load point	0.03 N		
slack correction	applied			Determination of rupture point	0.5 N		
Storing SS curve	ON						

TestID=17 Test No.	Maximum load kgf	Maximum load N	Rupture load kgf	Rupture load N	Elastic Modulus MPa
1	1.0401	10.200	1.0284	10.085	2.5168
2	0.7095	6.9574	0.6856	6.7231	1.4561
3	0.7142	7.0038	0.6339	6.2164	1.4976
4	0.8572	8.4063	0.8503	8.3387	1.6830
5	0.6693	6.5639	0.6613	6.4847	1.1928
Average	0.7981	7.8263	0.7719	7.5696	1.6653
JIS weighted avg.	0.9196	9.0180	0.9040	8.8649	2.0527
Median	0.7142	7.0038	0.6856	6.7231	1.4976
Maximum	1.0401	10.200	1.0284	10.085	2.5168
SD(n-1)	0.1529	1.4996	0.1663	1.6313	0.5050
SD(n)	0.1368	1.3413	0.1488	1.4591	0.4517

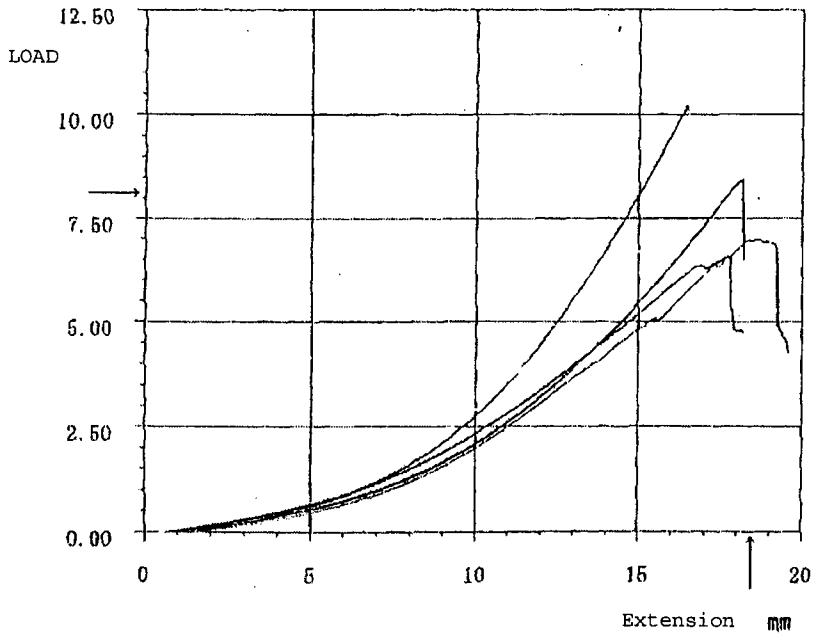


Fig. 4

Results of tensile strength test of the decellularized tissue (1) with a coating of PVA onto an artificial valve prepared by the decellularized method using SDS

Testing machine	RTC series			Type of testing	Extension			
Load in full-scale	5 kgf			Rated capacity of load cell	100 N			
Range of load	40 %RO			Rated capacity of the extensometer	20 cm			
Range of the extensometer	unapplied			Test Speed	10.0 mm/min			
Recording speed off				Rigidity of the testing machine	0 mm/kgf			
Midpoint (load)	0	0	0	Midpoint	0	50	60	
N	0	0	0	(extension) cm	0	0	0	
Analysis of	Interval	1	50	Initial length : Distance between chunks	10 mm			
Elastic moduli	Pitch	1 %max		origin in extension initial load point	0.03 N			
slack correction	applied			Determination of rupture point	0.5 N			
Storing SS curve	ON							

TestID=140 Test No.	Maximum load kgf	Maximum load N	Rupture load kgf	Rupture load N	Maximum Extension mm	Elastic Modulus MPa
1	1.0359	10.158	0.8376	8.2140	21.667	1.2612
2	1.3338	13.082	1.1904	11.674	24.060	1.2459
3	1.5541	15.240	1.1569	11.345	19.507	1.5949
4	1.4570	14.288	1.2815	12.567	18.267	2.0703
Average	1.3452	13.192	1.1166	10.950	21.125	1.5431
JIS weighted avg	1.4511	14.231	1.1973	11.742	22.407	1.7643
Median	1.3955	13.685	1.1737	11.510	20.587	1.4280
Maximum	1.5541	15.240	1.2815	12.567	24.060	2.0703
SD(n-1)	0.2251	2.2071	0.1933	1.8958	2.2346	0.3866
SD(n)	0.1949	1.9114	0.1674	1.6418	1.9352	0.3348

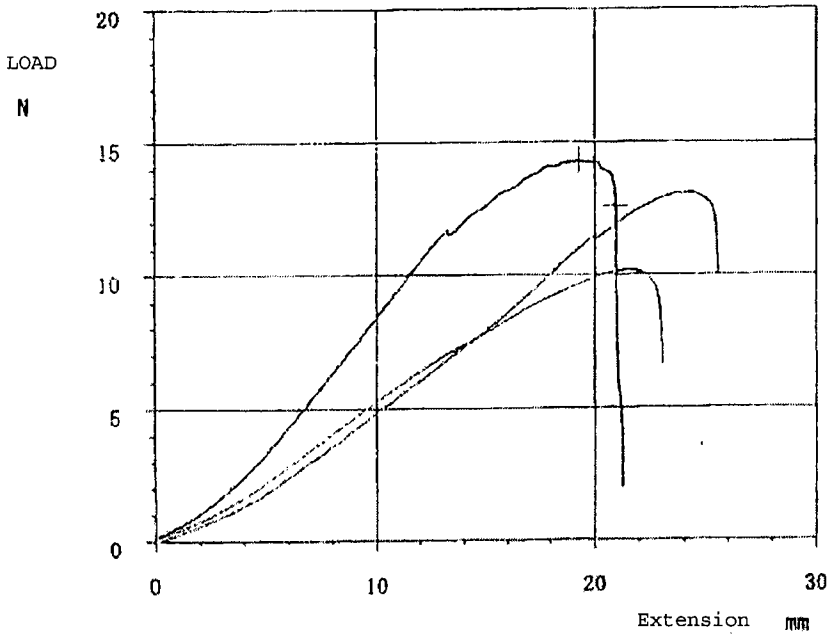


Fig. 5

Results of tensile strength test of the decellularized tissue (2) with a coating of PVA onto an artificial valve prepared by the decellularized method using SDS

Testing machine	RTC series			Type of testing	Extension		
Load in full-scale	5 kgf			Rated capacity of load cell	100 N		
Range of load	40 %RO			Rated capacity of the extensometer	20 cm		
Range of the extensometer	unapplied			Test Speed	10.0 mm/min		
Recording speed off				Rigidity of the testing machine	0 mm/kgf		
Midpoint (load)	0	0	0	Midpoint	0	50	60
N	0	0	0	(extension) cm	0	0	0
Analysis of Elastic moduli	Interval	1	50	Initial length Distance between chunks	10 mm		
	Pitch	1 %max		origin in extension initial load point	0.03 N		
slack correction	applied			Determination of rupture point	0.5 N		
Storing SS curve	ON						

TestID=141 Test No.	Maximum load kgf	Maximum load N	Rupture load kgf	Rupture load N	Maximum Extension mm	Elastic Modulus MPa
1	1.0167	9.9703	0.9436	9.2538	19.327	1.2984
2	1.6216	15.902	1.1853	11.623	19.307	1.8565
3	2.0021	19.634	1.9176	18.806	21.647	1.9274
Average	1.5468	15.169	1.3488	13.228	20.093	1.6934
JIS weighted avg.	1.8275	17.921	1.6738	16.414	20.949	1.8501
Median	1.6216	15.902	1.1853	11.623	19.327	1.8565
Maximum	2.0021	19.634	1.9176	18.806	21.647	1.9274
SD(n-1)	0.4870	4.8734	0.5072	4.9739	1.3453	0.3457
SD(n)	0.4058	3.9791	0.4141	4.0612	1.0984	0.2822

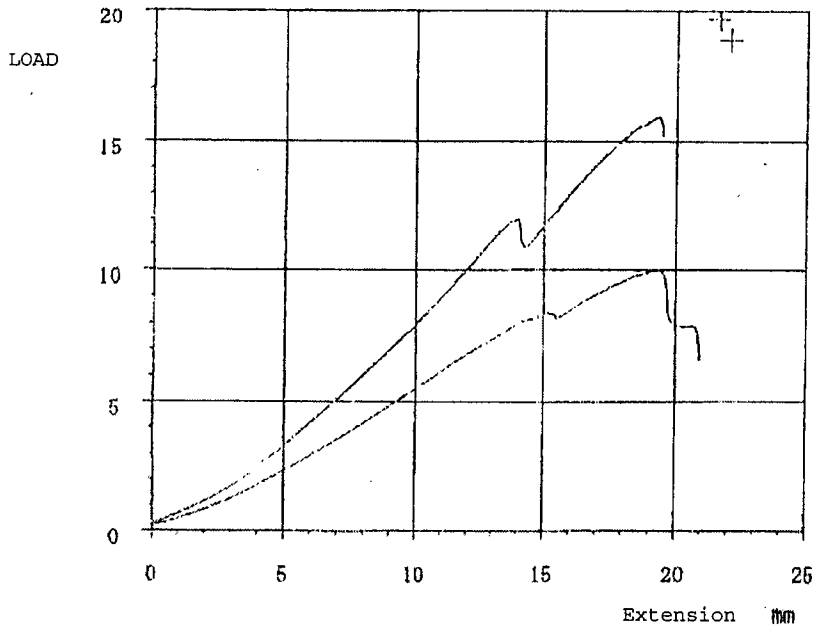
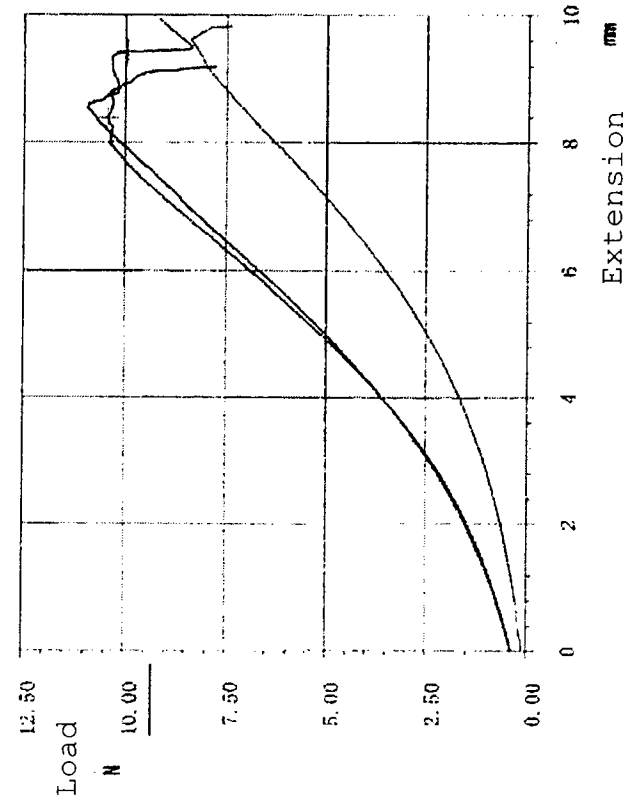
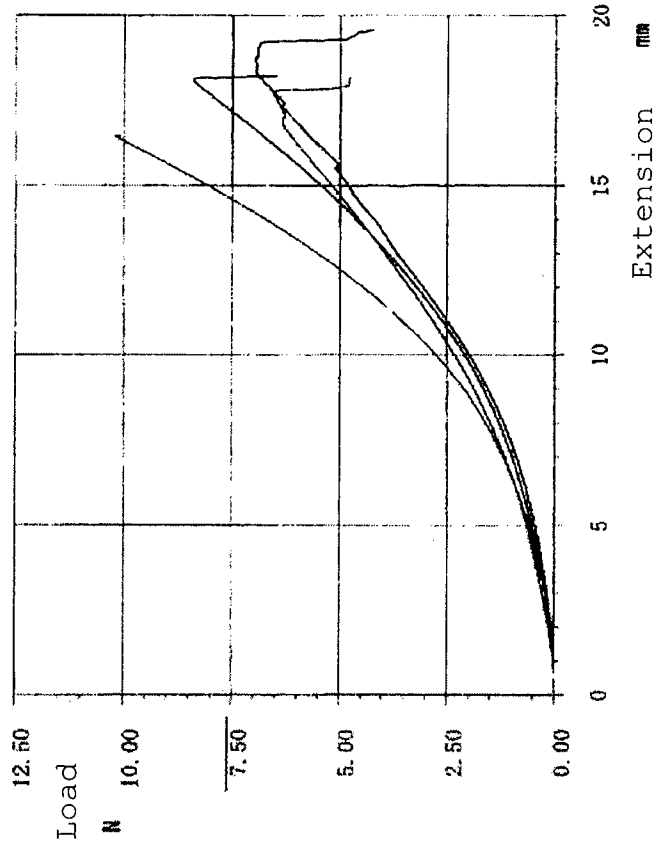


Fig. 6



PVA coating

(PVA 10%+Na_3BO_3), γ-ray 60kGy



Decellularized valve

Fig. 7

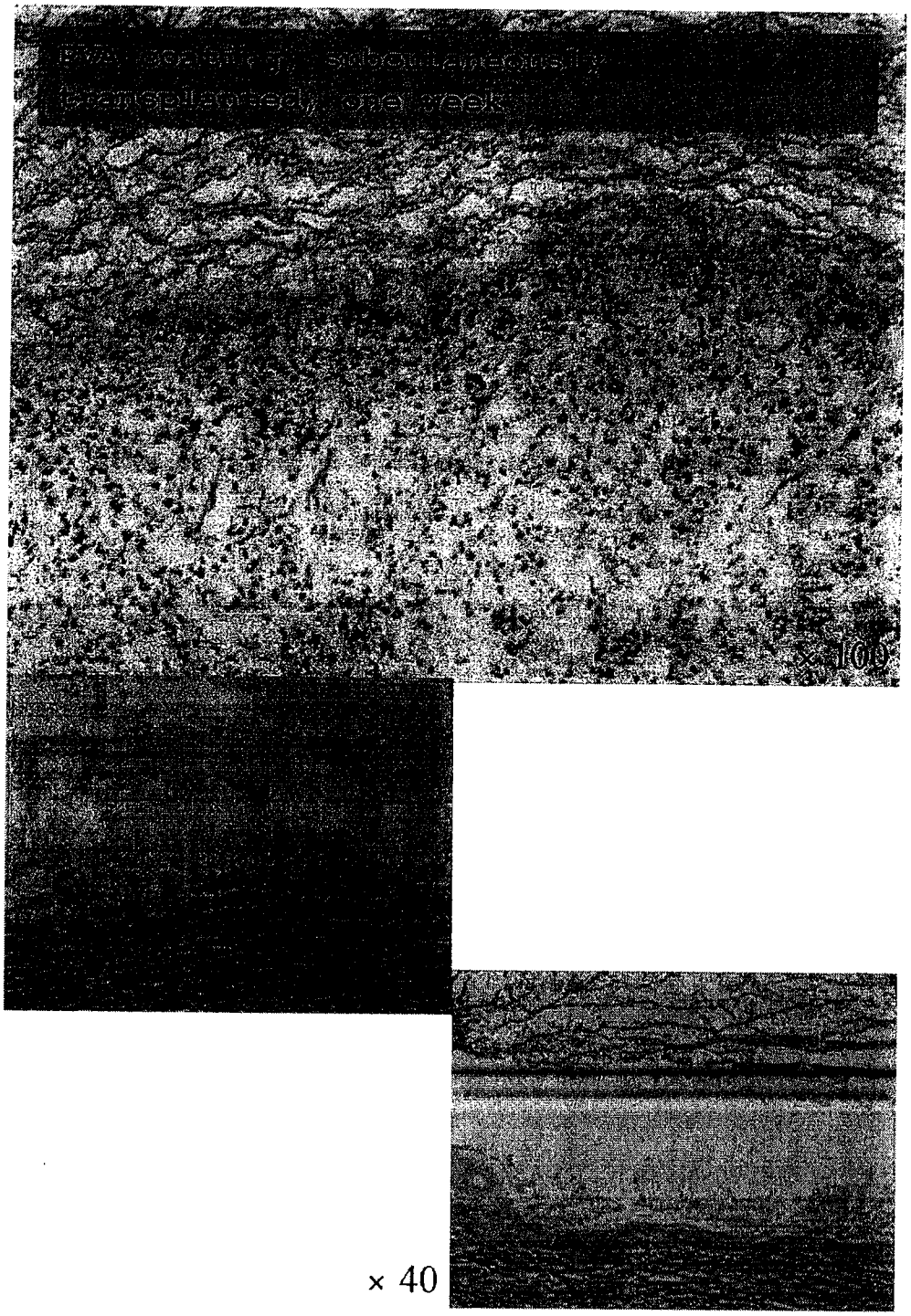


Fig. 8

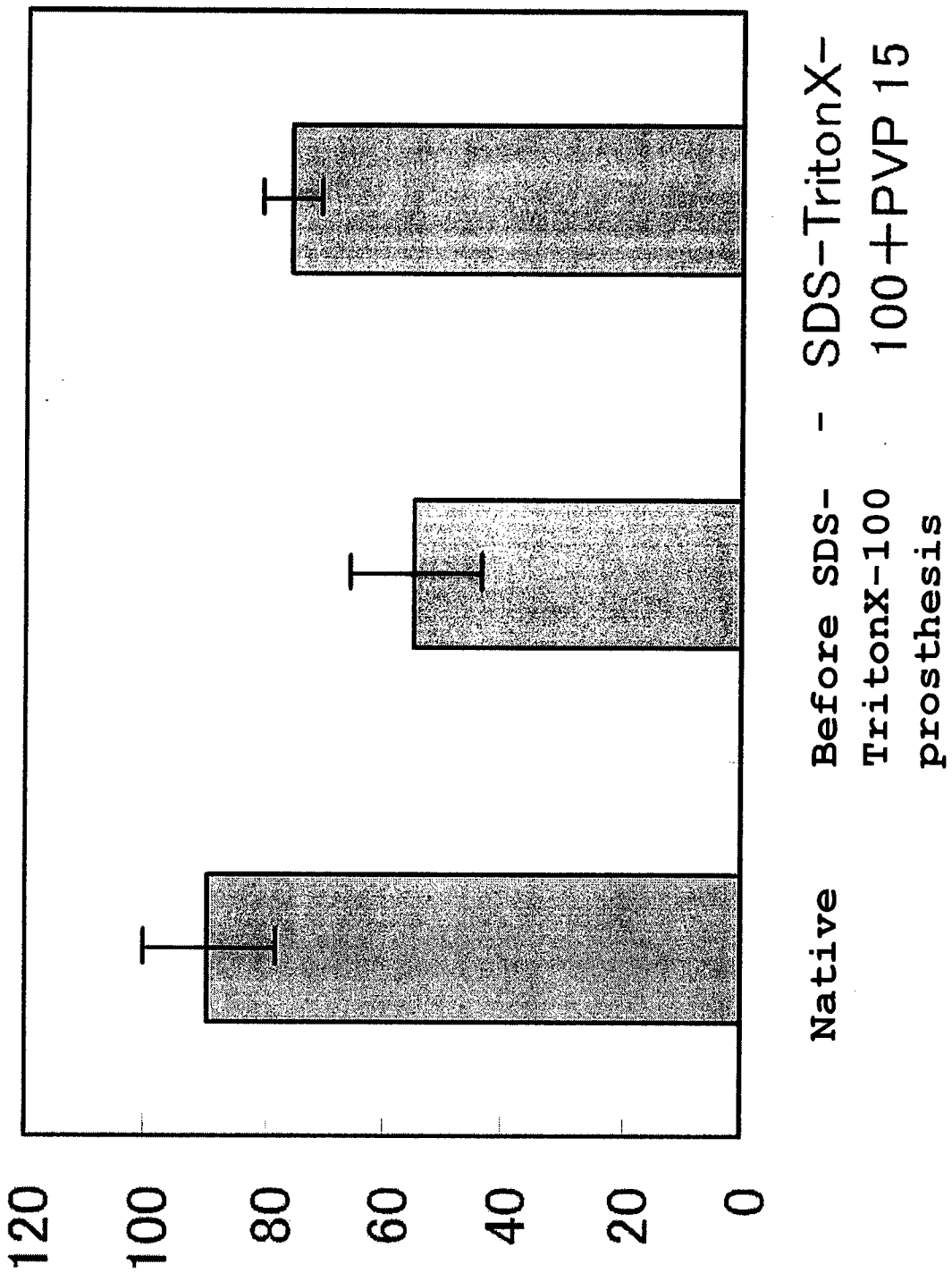

120
100
80
60
40
20
0
Native
Before SDS-TritonX-100 prosthesis
- SDS-TritonX-100+PVP 15

Fig. 9

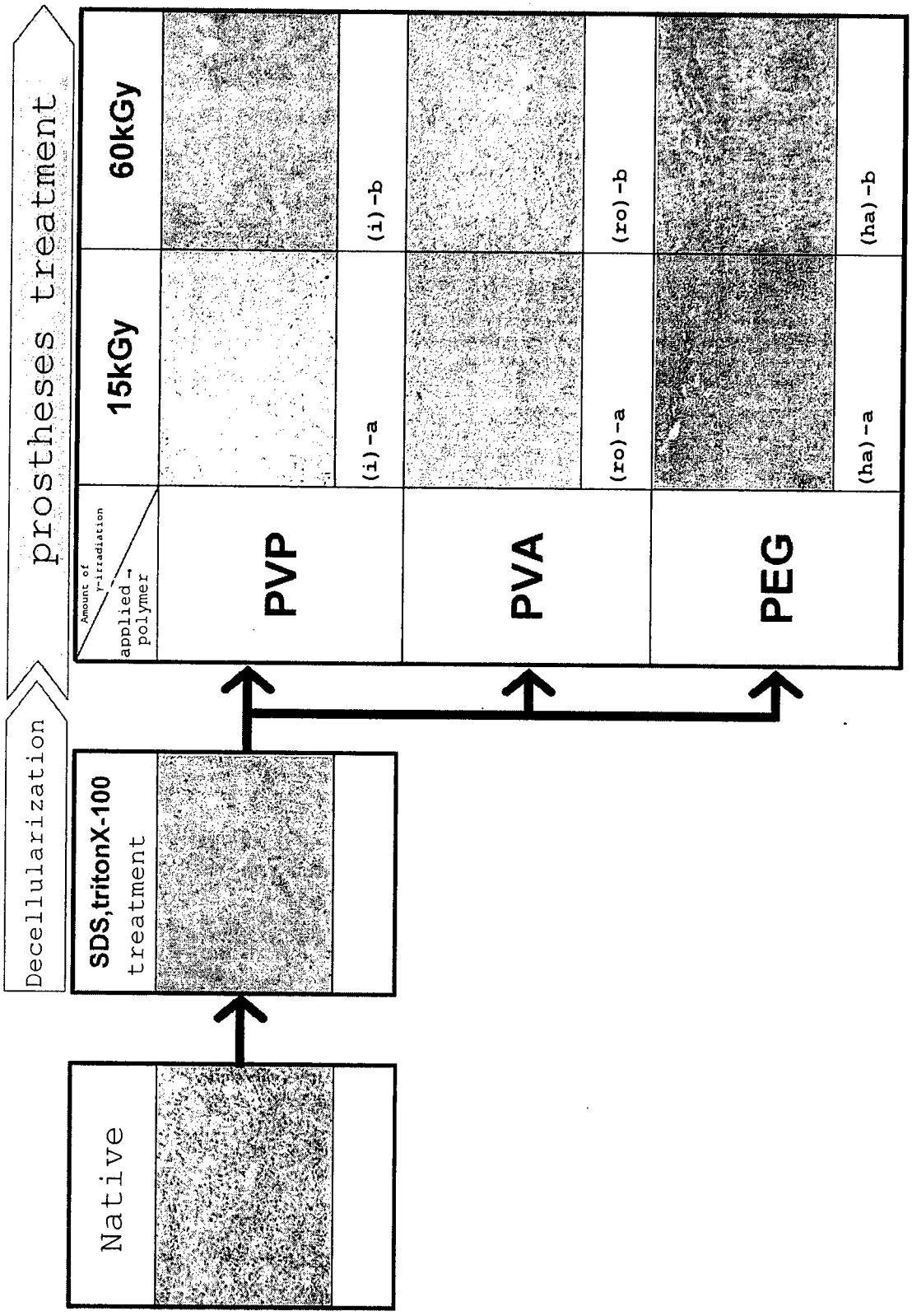

Native
Decellularization
SDS,tritonX-100 treatment
prostheses treatment
Amount of γ-irradiation applied → polymer
15kGy
60kGy
PVP
PVA
PEG
(i)-a
(i)-b
(ro)-a
(ro)-b
(ha)-a
(ha)-b

Fig. 10

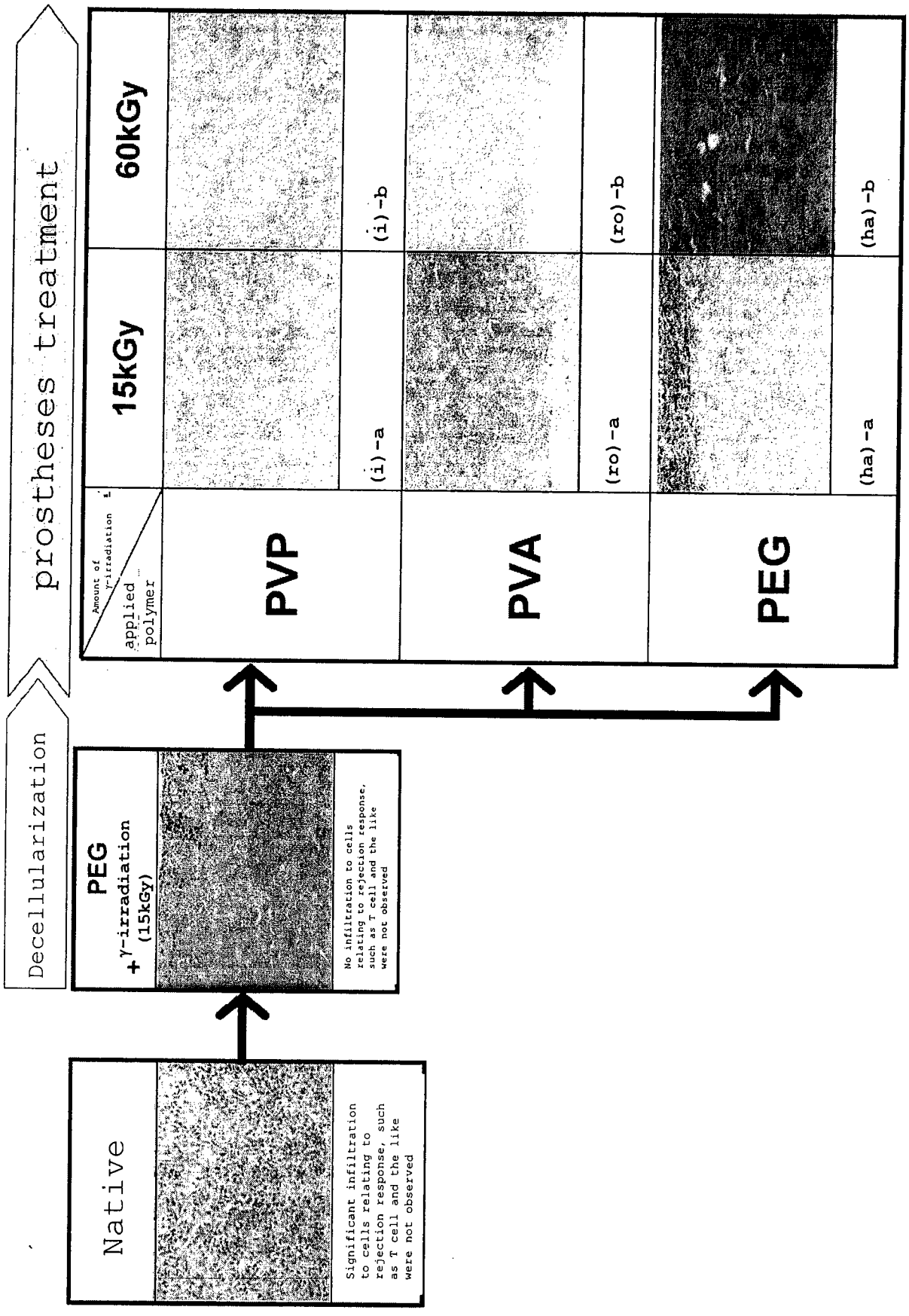

Native
Significant infiltration to cells relating to rejection response, such as T cell and the like were not observed
Decellularization
PEG
+γ-irradiation (15kGy)
No infiltration to cells relating to rejection response, such as T cell and the like were not observed
prostheses treatment
Amount of γ-irradiation
applied polymer
15kGy
60kGy
PVP
(i)-a
(i)-b
PVA
(ro)-a
(ro)-b
PEG
(ha)-a
(ha)-b

Fig. 11

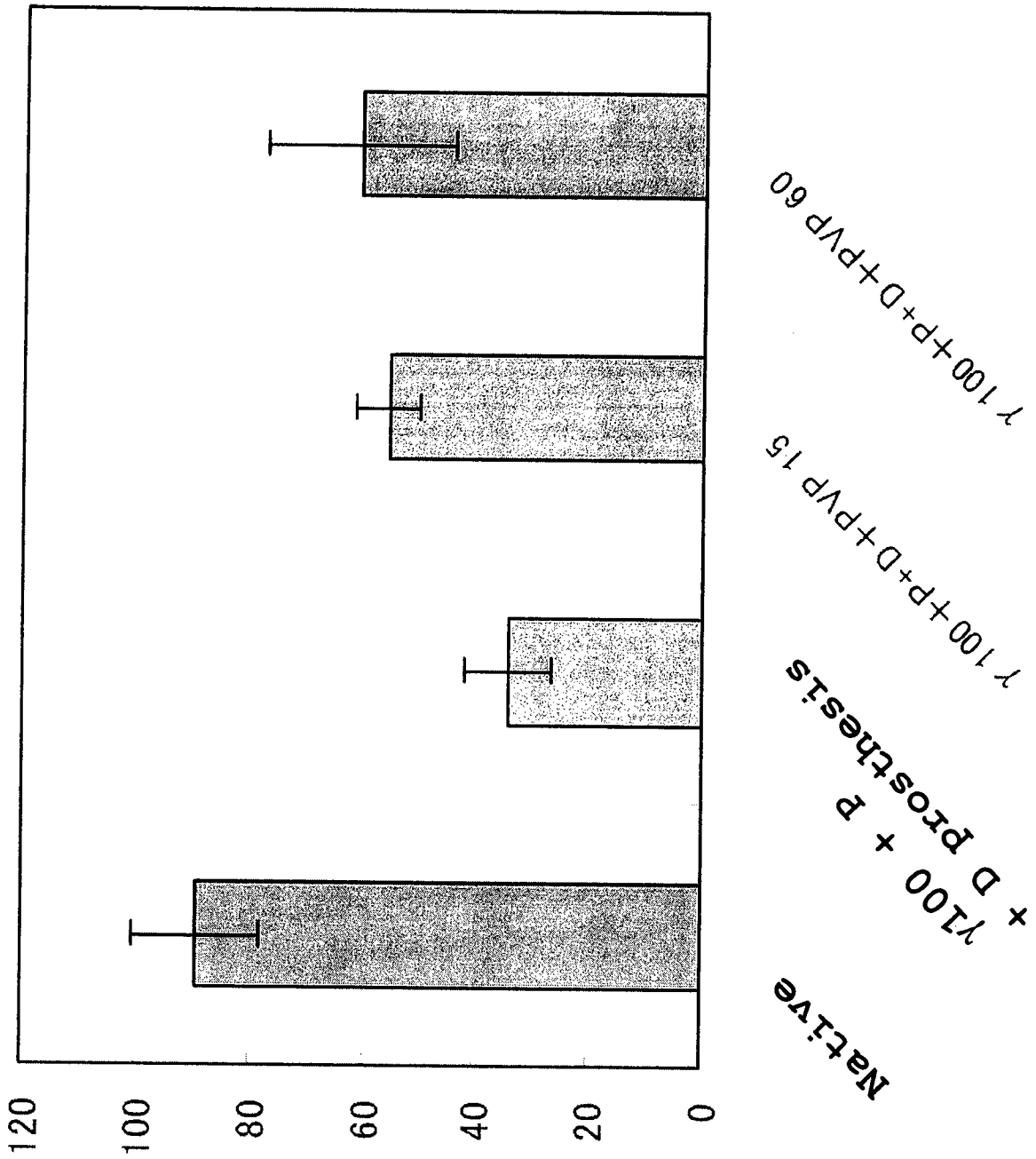

120
100
80
60
40
20
0
Native
γ100 + P + D pisothesis
γ 100+P+D+PVP 15
γ 100+P+D+PVP 60

Fig. 12

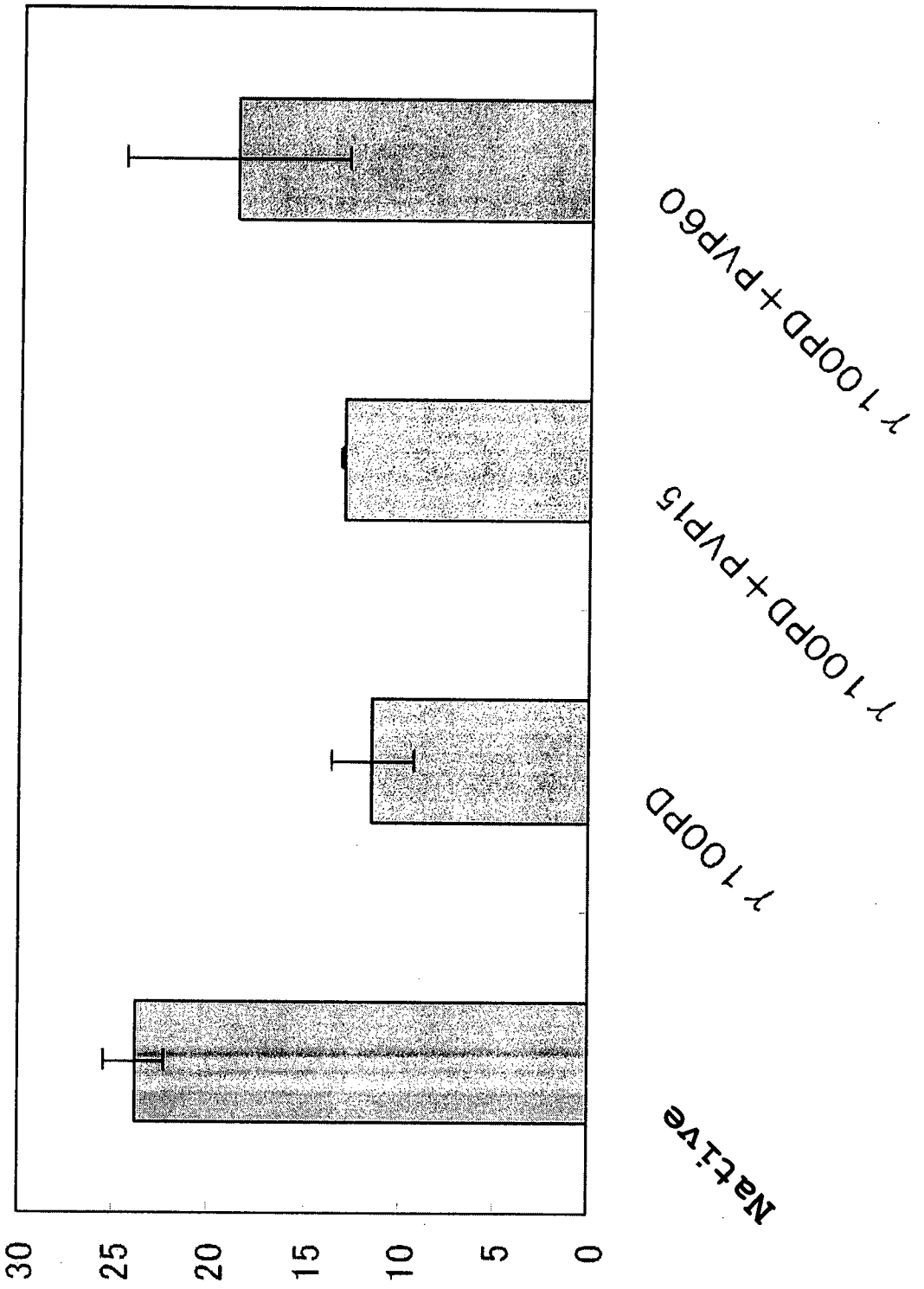
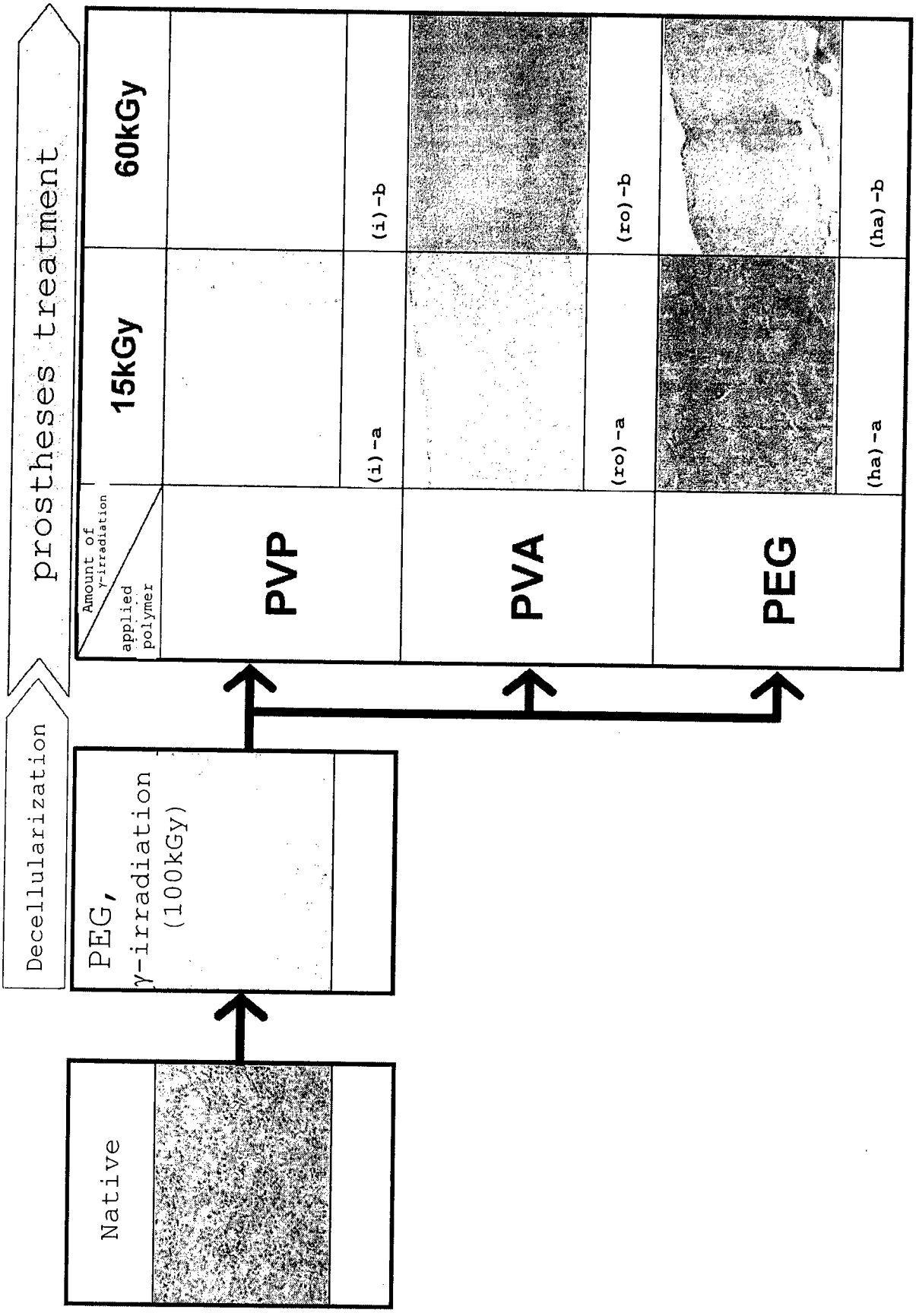


Fig. 13


Native
PEG,
γ-irradiation
(100kGy)
Decellularization
prostheses treatment
Amount of γ-irradiation
applied polymer
15kGy
60kGy
PVP
PVA
PEG
(i)-a
(i)-b
(ro)-a
(ro)-b
(ha)-a
(ha)-b